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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/164,517	09/30/98	LIANG	J TI-26414AA

023494 WM31/0117  
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EXAMINER

WU, J

ART UNIT	PAPER NUMBER
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2623

DATE MAILED:

01/17/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
09/164,517

Applicant(s)  
Liang et al.

Examiner  
Jingge Wu

Group Art Unit  
2623



☒ Responsive to communication(s) filed on Nov 24, 2000

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-7 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-7 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 2623

***Response to Amendment***

1. Applicants' response to the last Office Action, filed Nov. 24, 2000 has been entered and made of record.
2. Applicants' amendment has required new grounds of rejection. New grounds rejection are therefore presented in the Office Action. The Examiner likes to point out that applicant does not provide any argument regarding claim 1 so that Examiner assumes applicant admits that the rejection on claim 1 is appropriate.

***Specification***

3. The disclosure is objected to because of the following informalities: in page 17 line 18 "ofhte" should be --of the --; line 19 "cmparction" should be --compression--.

Appropriate correction is required.

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CAR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

in claims 4 and 5, there is no support in the specification for claim language.

***Claim Rejections - 35 U.S.C. § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

Art Unit: 2623

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 4 and 5 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no I, P, and B frames and bi-directional motion compensation claimed as in Claims 4 and 5 which clearly described in the specification.

***Claim Rejections - 35 U.S.C. § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

8. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent 5442458 to Rabbani et al. ("Rabbani" a reference of record).

As to claim 1, Rabbani discloses a method of encoding an image, comprising:

a) decomposing an image into bit plane(col. 4 lines 47-48); and

Art Unit: 2623

b) arithmetic encoding the bitplanes with a context model from the neighboring bits in a bitplane and previous bits at location in previous bitplanes (Fig. 3 col. 4 lines 49-67 and col. 5 lines 40-68).

9. Claim 1 and 2 are rejected under 35 U.S.C. 102(a) as being anticipated by the article "Efficient context-based entropy coding for lossy wavelet image compression" to Chrysafis et al. ("Chrysafis").

As to claim 1, Chrysafis teaches a method of encoding an image, comprising:

a) decomposing an image into bit planes (page 241 note that wavelet image compression decomposes the image into subbands i.e. bit planes); and

b) arithmetic encoding the bitplanes with a context model from the neighboring bits in a bitplane and previous bits at location in previous bitplanes (page 242 and Fig. 1).

As to claim 2, Chrysafis further discloses the decomposition includes:

a) wavelet transform the image into a hierarchy of coefficients and bitplanes are of transform coefficients (page 241); and

b) the arithmetic coding includes a forgetting factor for adaptive context statistic determination (Abstract, pages 241-243 and Fig. 1 note that this case  $N=13$ ).

### ***Claim Rejections - 35 U.S.C. § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2623

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chrysafis.

As to claim 3, Chrysafis does not mention choosing forgetting factor is 127.

However, choosing the length of the forgetting factor is a designing choice based on the computing power and practical requirement of projects.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the forgetting factor 127 in the method of Chrysafis because it is desirable to obtain the optimal probability model based on the context (Chrysafis, page 243). By using the larger forgetting factor, the context for a coefficient contain more information about probability models of the coefficient so as to obtain efficient entropy compression of the coefficient so that the compression ration of the method is improved.

As to claims 4 and 5, Chrysafis dos not mention bi-directional motion compensation.

However, Examiner takes Official Notice that an I frame with P and B frames in video sequence for bi-directional motion compensation is well known.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the method of Chrysafis in the series video because it is desirable to use arithmetic coding based on the context for better compression. By using the scheme of

Art Unit: 2623

Chrysafis on I frame, the arithmetic coder adaptively uses context models for obtaining efficient entropy compression of the coefficient so that the compression ratio as well as transmission speed of the method is improved.

12. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chrysafis in view of U.S. patent 5818877 to Tsai et al. ("Tsai").

As to claim 6, Chrysafis does not explicitly mention simple and natural images.

Tsai, in an analogous environment, discloses the steps of :

a) the decomposition of the image into bitplanes includes a partition of the image into simple (run context i.e. bilevel) and natural (level context) portions (Fig. 11 col. 15 lines 1-5);  
and

b) the arithmetic coding uses different context modes for the simple and natural image portions (Fig. 11 and 13 col. 15 line 58-col. 16 line 33).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the adaptive arithmetic coding based on different context of Tsai in the method of Chrysafis because it is desirable to use arithmetic coding based on the context for better compression (Tsai, col. 2 lines 39-55). By using the scheme of Tsai, the arithmetic coder adaptively uses context models for obtaining efficient entropy compression of the coefficient so that the compression ration of the method is improved.

Art Unit: 2623

***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CAR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CAR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***

14. Any inquiry concerning this communication or earlier communications should be directed to Jingge Wu whose telephone number is (703) 308-9588. He can normally be reached Monday through Thursday from 8:00 am to 5:30 pm. The examiner can be also reached on second alternate Fridays.

Any inquiry of a general nature or relating to the status of this application should be directed to TC customer service whose telephone number is (703) 305-4700.



Art Unit: 2623

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Amelia Au, can be reached at (703) 308-6604.

The Working Group Fax number is (703) 308-5397.

Jingge Wu

  
Patent Examiner

Art Unit 2723

January 5, 2001

  
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